$$\frac{dD}{dT} = \frac{n\,\varepsilon_0 \left(\frac{dE_1}{dT} - \frac{dE_2}{dT}\right)}{101.4\,A\,(V_w - V_g)}$$

or:

$$\frac{dT}{dD} = \frac{101.4\,A\,(V_w - V_g)}{n\,\varepsilon_0 \left(\frac{dE_1}{dT} - \frac{dE_2}{dT}\right)} = 0{,}00105\,\frac{A\,(V_w - V_g)}{n\left(\frac{dE_1}{dT} - \frac{dE_2}{dT}\right)}.$$

The advantage of this equation, which so far as I am aware is deduced here for the first time, is, from the practical point of view, that it is possible to determine the displacement of the transition temperature by external pressure by means of electrical measurements, if the specific gravities of the two modifications forming the electrodes have been determined.

For the electrical determinations of the temperature coefficients of the two electrodes of the transition element in the neighbourhood of the transition point quite small quantities of the electrode material (1 or 2 grams) suffice, whilst for calorimetric determinations, which in the nature of things are less accurate, considerable quantities are required.

The result of the measurements will be communicated as soon as the specific gravity of the grey tin has been determined in a completely satisfactory way.

Amsterdam, Chem. Lab. of the University, September 1899.

Chemistry. — Prof. H. W. BAKHUIS ROOZEBOOM in presenting the dissertation of Dr. D. J. HISSINK: "*On mixed Crystals of Sodium nitrate with Potassium nitrate and of Sodium nitrate with Silver nitrate*", makes the following communication with respect to it.

This research is a third contribution to our knowledge of the phenomena observed in the solidification of fused mixtures of two substances which form mixed crystals and in the transformation of the mixed crystals into another modification.

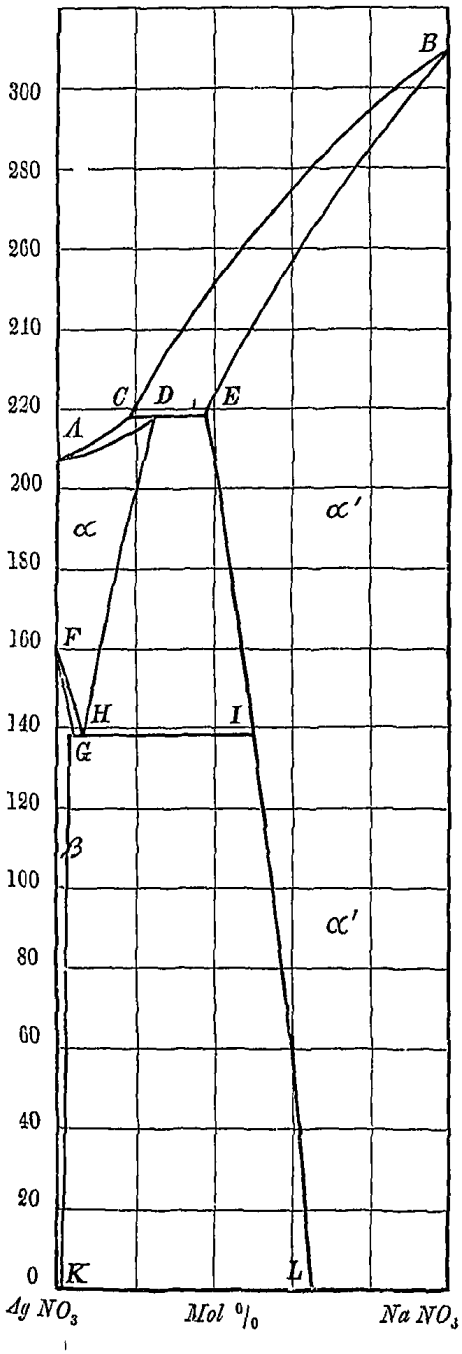
With respect to the system $KNO_3 + NaNO_3$ the fact is mentioned that mixed crystals are formed on solidification; the limits within which these can exist are, however, so narrow that it did not appear to be worth while to investigate the exact connection between the phenomena.

The solidification of the system $NaNO_3 + AgNO_3$ belongs to a type of which no example was known. The meltingpoint line rises continually from the meltingpoint of $AgNO_3$ (208,°6) to that of $NaNO_3$ (308°). It consists, however, of two branches, AC and CB,

which join each other at an angle at 217,°2. Although all the mixed crystals are rhombohedral, the series of mixtures is discontinuous; at 217°2 there is a sudden transition from mixed crystals with 38 % (in molecules) $NaNO_3$ (E) to those with 26 % (D). The fused mass which is in equilibrium with both contains 19.5 % (in molecules) of $NaNO_3$ (C).

On cooling the following transformation takes place at 217°,

Fused mass C + crystals $E \rightarrow$ crystals D.



This temperature possesses all the characteristics of a transition temperature.

The points on the lines EB and AD represent the compositions of the mixed crystals which are deposited from a liquid having the composition represented by points on the lines CB and AC corresponding to the same temperature.

Below AD a series of homogeneous mixed crystals containing from 0 to 26 % $NaNO_3$ exists, and below EB a similar series from 38—100 % $NaNO_3$.

The mixed crystals containing 26 and 38% which coexist at 217°, gradually change in composition as the temperature falls, in such a way that the limits between which no mixture exists become more widely separated, so that at 138° they are 4.2 and about 50 % $NaNO_3$ (H and J). The region within which homogeneous mixed crystals exist, becomes smaller and smaller.

Below 160° a change occurs in the series which is rich in silver, in consequence of which the rhombohedral crystals are converted into rhombic crystals. With pure silver nitrate this takes

place at 160°, the addition of sodium nitrate depresses this temperature.

The limiting mixed crystal of the series which is rich in silver undergoes the change at 138°.

Below 138° only rhombic crystals, containing much silver, and rhombohedral crystals, containing much sodium, are capable of existence.

No transformation has been observed in the latter down to — 50°.

The limits of composition of the two kinds of crystals become more and more restricted as the temperature falls below 138°, so that at 15° they are 0—1,6 % (in molecules) $NaNO_3$ and 64.4—100 % $NaNO_3$.

The compositions of the coexisting limiting crystals were determined by allowing them to deposit beside each other from suitable solutions.

The transformation of the rhombohedral into rhombic crystals on the lines *FH* and *FG* was determined by means of an air dilatometer.

Chemistry. — By Prof. H. W. BAKHUIS ROOZEBOOM: "*The Nature of inactive Carvoxime.*"

In continuation of the investigations of Mr. ADRIANI on the phenomena of fusion and solidification of mixtures of optical antipodes, carvoxime has been examined. Samples of the *d*- and *l*-oximes were prepared for us through the kindness of Prof. GOLDSCHMIDT of Heidelberg.

Up to the present time the inactive carvoxime has been regarded as a racemic compound. This view rested on the facts that the melting point is higher than that of the active substances and that the density is greater (1.126 against 1.108).

The investigation of the melting and solidifying points gave the following results.

Composition of the fused mass.	Commencement of solidification.	End of solidification.
100% *d* of *l*	72°	72°
99 " "	72°4	—
98 " "	73°0	—
95 " "	75°4	73°
90 " "	79°0	75°
80 " "	84°6	80°
75 " "	86°4	82°
70 " "	88°2	85°
60 " "	90°4	—
50 " "	91°4	91°.4